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ABSTRACT

While there is significant variation in women's economic participation rates across cultures and situations in Third World countries, the common features in work patterns of poor women are striking. Segmented labor markets predominate throughout the developing world and restrict the demand for female labor to subsistence activities or to jobs in sectors of the market economy with low pay and status, limited tenure, and few chances for upward mobility. Low income women are most often engaged in household and market work, which is time consuming, inefficient, and intermittent; and their activities use few modern tools and skills and entail little or no capital investment. Poor working women, more than men, lack the benefits of productive resources, which increase productivity and economic returns to labor. This occurs because of women's place in the structure of technology and credit use--women are not in a position to have access to these productive resources in their modern forms. Women do not demand modern technology and credit because of several factors: lack of information concerning the availability of credit or technology; limited opportunity for profitable investments; cultural constraints that restrict women in interacting with male bank officials or extension agents; and lastly, women's lack of control over other economic resources, such as land or other property, which realistically prevents them from demanding their resources. Policy changes need to be made to improve women's access to technology and credit in the Third World--both through general development of resources and through specific strategies to help women. (Such strategies are suggested in this report.) (KC)

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LIMITS TO PRODUCTIVITY: IMPROVING WOMEN'S ACCESS TO TECHNOLOGY AND CREDIT

International Center for Research on Women

May 1980

Prepared by Ilsa Schumacher, Jennefer Sebstad and Mayra Buvinic for the Office of Women and Development, Bureau of Program and Policy Coordination, Agency for International Development under Contract Number AID/OTR-C-1801.

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INTRODUCTION

This paper investigates the relation between women and productive resources. The discussion focuses on the definition, nature and extent of women's access, areas of resource needs, and obstacles to both access and use. Why and how resources are integral to women's involvement in the development process and differences in the situation for men and women are also presented.

Contrary to commonly held views, women among the poor in the Third World are active workers in a broad range of economic activities. Women on farms grow food crops, tend animals, clear the land and build roads; on large agricultural estates they are employed as wage laborers; within the household women provide fuel, food and water; and in villages, towns and cities they sell and trade, work in markets, shops, factories, and low pay service occupations.

While there is significant variation in women's economic participation rates across cultures and situations, the common features in work patterns of poor women are striking. Segmented labor markets predominate throughout the developing world and restrict the demand for female labor to subsistence activities or to jobs in sectors of the market economy with low pay and status, limited tenure and few chances for upward mobility. Low income women are most often engaged in household and market work which is time consuming, inefficient and intermittent. Their activities utilize few modern tools and skills and entail little or no capital investments. In all regions poor working women, more than men, lack the benefits of productive resources which increase productivity and economic returns to labor.

Women's low productivity and earnings would be less critical development issues if increases in men's productivity and income resulted in increased family welfare. The economic welfare of poor families, however, has ceased to be the sole

responsibility of men. With marital dissolution and abandonment, rising poverty, male unemployment and underemployment, and male labor migration, the economic responsibility for poor households in many cases has shifted to women or has been redistributed among household members. The economic need of women is evident in the growing numbers of households headed by women in developing countries. Across countries, these households consistently have the least economic resources. Less evident, but equally critical is the increasing importance that women's work and earnings have in supplementing the income of households headed by men.

Other papers in this series on employment and income generation for low income women in developing countries describe in detail the nature of women's work at home and in the market, analyze their employment patterns and needs, and explain why work statistics have consistently failed to capture the range and extent of women's economic participation (see ICRW 1980a, 1980b). In the search for solutions to the economic needs of women, this report focuses on a fundamental bottleneck that prevents poor women from increasing their productivity and income. It examines how the allocation and distribution of two productive resources, technology and credit, contribute to the poverty of women and families in the Third World.

Productive resources are defined as inputs to production which improve the quality and quantity of the product such that the total cost of the inputs (both in terms of monetary and opportunity costs) is smaller than the total benefits accrued from its introduction. Access is defined as the capacity to know of productive resources and to acquire and make use of them. Benefits are defined as increases in productivity and income of the users who are providing the labor inputs.

The process of achieving access to productive resources requires a series of conditions:

1. Demand and supply factors affect access. Those who use or potentially use resources must know that they are there (whether or not they actually know

the range of resource options) and are available. Users also must be able to translate their needs into a demand and to understand how a particular productive resource fits into the process of production. From the supply side, resources are "supplied" in the basis of the perceived needs attributed to the users. Users are then expected to effectively utilize those inputs made available.

2. The existence of channels for the flow of resources through supply and/or demand factors is a second condition for access. At the local level this means users must know how and where they can acquire the resources they need (provided that channels exist).

3. Third, individuals must be able economically, educationally, and culturally to demand, obtain and make use of the resources they have identified as important to the satisfaction of their needs.

Once access is assured, for productive resources to expand output and income, users must have the freedom and flexibility to decide about the use of the resources and, most critically, control over the products which these resources help to create.

The poverty of women in developing countries is often attributed in part to their lack of access to technology and credit. But the issue of access is not a question of women either with or without credit or technology. Women are and always have been users of both technology and credit. The key question is not one of women lacking access to technology or credit per se, but lacking access to particular modern forms of technology and credit.

It is well known that when the plow was first introduced in African agriculture, it was introduced to men. This allowed men to grow cash crops and enter the modern economy while it forced women to remain in the subsistence sector. This and other labor displacing technologies, especially in agriculture, are usually discussed in terms of their impact on women. This approach almost seems

to imply purpose and selective isolation in the sense that technology itself is perceived as a "force." Technology is not a force, visible or invisible, nor is it uncontrollable; in itself it is not a "negative" input nor does it exclusively impact on women. How and to whom the plow was introduced rather than introduction of the plow per se made the difference. Various reasons have been offered to the question of why the plow was introduced to men rather than women, none of which is entirely satisfactory by itself. Some say that women's childcare responsibilities restricted them from working in permanent fields, usually far away from home. Others argue that sexual differentiation took place simply because it was "adaptive." This paper offers additional arguments on the issue of differential access to resources which seem to apply equally well to both technology and credit.

A main premise is that the primary constraints women face in having access to modern technologies and formal credit systems is not due to these productive resources in themselves, or to women, or to any denial unique to women (i.e. men get it and women don't). Rather, it occurs because, due to their place in the structure of technology and credit use, women are not in a position to have access to these productive resources in their modern forms. In more general terms, there is sex discrimination in access but sex discrimination per se is not an explanatory factor. The roots of sex differences in access to modern productive resources, namely credit and technology,can be due to a combination of factors:

1. Economic structures, historically created and presently maintained, have promoted dual economies characterized by modern/cash and traditional/ subsistence production. This is fundamental to the perpetuation of poverty and to poor women's lack of access to modern technology and financial resources.

2. A second set of constraints relate to the way that development policies and programs have been formulated and introduced by national governments,

bilateral and international agencies, and private voluntary organizations. Current strategies tend to contribute to the intensification and institutionalization of the socioeconomic structures just mentioned.

3. The third set of constraints to women's access to productive resources is related to limited supply of and demand for modern technology and credit. As an example, there is little or no supply of household technologies directly geared to women's work, most likely because the suppliers of technology perceive these technologies to be a low priority need. There also are restrictions in the supply of formal credit to the poor because of problems and costs in servicing small or new borrowers. Most women fall in both of these categories of borrowers.

The low demand for modern technology and credit by women is a function of several factors, including: lack of information concerning the availability of credit or technology; limited opportunity for profitable investments; cultural constraints which restrict women in interacting with male bank officials or extension agents; and lastly, women's lack of control over other economic resources, such as land or other property, that realistically prevents them from demanding their resources.

Closing the supply/demand circle, women's lack of control over economic resources and the importance given to their reproductive roles causes suppliers to perceive them as poor investment opportunities. This automatically closes to women the channels necessary for access.

Low income women in developing countries, who are landless or marginal producers, and/or without collateral for credit, are financially locked out of a position of access. Without avenues for access to technology and credit, women (and other marginal groups) find themselves in a vicious circle -- they can't get a resource which would improve their productivity, which would improve

their income and thus propel them into a position to become "attractive" investments. Because of their lack of economic resources and their reproductive roles, poor women fall more deeply than men into the vicious circle of poverty. The next chapters examine in more detail the productive resources of technology and credit in relation to women and the constraints women face in gaining access to them. The last chapter provides some recommendations for improving women's access to these resources as a step towards breaking the circle of poverty.

I. WOMEN'S ACCESS TO TECHNOLOGY

Previous studies of women and technology often are misleading because they are based on a limited understanding of what technology is, what its use in the production process means, and how its acquisition is dependent on an individual's position in the production process.

Technology is basically knowledge, a knowledge composed of two dimensions, one which involves the technical inputs to production (i.e. equipment, material hardware); the other is the ability to effectively utilize and adapt these inputs in the process of production. Technology is the pointed digging stick employed in ground preparation, the wooden bowl and stone mortar used to grind grain, the loom used to make cloth, as well as the utilization of information on new methods of double cropping, of water usage, of processing machine parts in factory production. Technology is never a constant. It is a factor which evolves continuously with new or improved products, new materials or new uses of old materials, new techniques of production or emerging market demands and supply (Stewart, 1979).

Thus the issue of "women and technology" is not a question of either/or, that is, women with or without technology. Women are and have always been users of technology, adapting and innovating upon it within the given parameters of the existing production process. It is, rather, a question of "new" technologies which offer the means for a more efficient, a more productive and a more extensive economic participation. Women, however, are presently using outdated technology at home and in the marketplace.

The key issue is not one of technology per se, but of the kinds of technologies women use for different kinds of activities and the position of women in the production process such that they can acquire and utilize new technologies. With the range of technology alternatives, why do women

use some and not others? What are the parameters present in the structure of use and in the existing channels of acquisition and distribution? What significance does this use and acquisition have for women's current economic involvement and future participation?

These questions are fundamental to women's use of technology in agricultural and off-farm production in rural areas, and in the informal and modern sectors in urban areas. In examining women's involvement in each of these areas, we argue that women's role (s) in the production process places her in a disadvantaged position to access technology. The significance of continued use of outdated technology (outdated vis a vis "new" technology) will also be demonstrated and illustrated with examples.

A. Women's Use of Technology

Home Production: Women are primarily if not exclusively responsible for domestic and food production activities. These activities include fetching and carrying water for drinking, cooking, washing and irrigation purposes; securing energy materials, typically firewood and organic waste materials; processing and cooking food. It is estimated that one sixth of women's energy is spent fetching and carrying water (Carr, 1976). In rural Senegal, women may spend anywhere from 7 to 17 hours, depending on the region and time of year, processing grains (i.e., obtaining wood and water, threshing, dehulling and grinding) (Yacuik, 1978).

These activities are almost always labor and time intensive tasks. Grain is ground by hand; water and fuel are fetched and carried after traveling long distances; and the fires used to prepare meals require large quantities of wood (Carr, 1979). These tasks grow more laborious as

fuelwood becomes scarcer, water tables fall, and other demands on women's time increase.

Technologies exist which could benefit both women and their families in the provision of these basic needs. Rain water catchments, tin roofs, hydraulic ram pumps, shallow well pumps and other water lifting devices effectively and simply reduce the burden of water acquisition. Solar reflector cookers, methane gas cookers, improved mud stoves can improve the efficiency of energy use and lessen the drudgery. Community held wood lots can lighten the task of collecting firewood, and to some extent prevent deforestation and soil erosion. Grain threshers and milling systems could significantly reduce the labor spent in food preparation. These technologies also open up the possibility of commercializing food preparation and other household tasks, and with it, the possibility of entering into income generating activities.[1]

These "labor-saving" technologies are critical insofar as they address a major constraint inhibiting women's productive activities, that is, the time spent carrying out these household responsibilities.[2] The provision of water supplies in rural areas, the introduction of light transport facilities for the portage of water, fuel, wood, farm produce and other loads; the adoption of efficient agricultural tools; and the application of grinding mills and other crop processing equipment are crucial inputs for freeing up women's time. These new technologies can help minimize women's double burden in their roles as producers in both the home and market. As women's time continues to be absorbed by these subsistence activities, the possibility for entering into income generating work (and thereby relieving her economic entrenchment to some extent) remains limited (Carr, 1979; Tinker, 1979; Staudt, 1979).

Agricultural Production: The fact that women's participation in agriculture is integral to the functioning of local economic structures and the well-being of rural households has been well documented (ICRW, 1980a, 1980b). Of concern here is that women's present involvement in cash crops is secondary to their production of food crops. It is important to examine women's participation in both activities because each entails the use of different technologies and different relations to technology.

The technology used in food production is often "primitive" relative to that used in cash crop production. When new technologies are introduced into subsistence production, they are not as advanced as the inputs provided for application to cash crops. Even when women enter cash crop production they continue to use technologies which are outdated. Two examples illustrate these trends.

In the Gambia, women plant and cultivate the basic subsistence crop, rice, using traditional wood and stone hoes. Their low-lying fields are irrigated, as they have for centuries, by the rain and the run-off from surrounding mountains and streams. The Gambian government, in what is considered a major advancement, recently introduced women to methods of row-planting and row-weeding, and animal drawn equipment for ploughing. Before, all weeding and planting was done randomly and ploughing was done by hand. Previous to the government efforts, Gambian women were not in a position to access technology because they were not aware of alternative methods (The Gambian government, 1978).

In Northwest Liberia, coffee and cocoa are grown only by men as cash crops. They are planted several times a year in rotating fields, and production is facilitated by the use of hired labor. The groves and the income derived from them belong exclusively to men (Currens, 1976). Rice

is grown by women as a subsistence crop. They grow peanuts as a cash crop only when time and resources are available to them (i.e. abandonment of old groves by men increases the availability of land; flexibility in household tasks increases the availability of time). However, given constraints. women grow few crops a year and do not utilize paid labor.

The Liberian women, although aware of alternate kinds of production (i.e. cash crop) were unable to access the technology necessary for effective and competitive participation. While it is often the case that cash crops receive more new technology input than subsistence crops, this did not hold true for Liberian women. Once in a position for access, they lacked the control over the resources necessary for production - land for larger scale production, the capital to hire labor, and the time to spend in extended cash crop cultivation. Both of these examples elaborate the restricted availability of new technologies for women to upgrade production.

Non-Agricultural Production: In addition to the cultivation of food crops, throughout the developing world women also engage in a variety of activities to supplement household income. This is exemplified in Nicaragua where women entrepreneurs are active in the production and sale of ceramics, vegetable fibers, dolls, toys, shellwork, and textiles.

Characteristic of these workers are low literacy rates, low levels of technology and training, inadequate work space, and primary dependency on family help for production. In contrast, small-scale male entrepreneurs work in leather, wood and metal, possess the most advanced technology, education and training, and earn the most money (Gillespie, 1979).

In Afghanistan, women often work as tailors, beauticians, traditional health practitioners, food preparers and handicraft producers. Women's production of silk involves raising silkworms, spinning and dyeing threads,

weaving the cloth and sewing the final product. These relatively "technology-free" processes are similar to those used centuries ago. However, while women are solely responsible for all production, the distribution and sale of final products with few exceptions are dependent on a "middleman," generally their male kin. In contrast to women in Nicaragua, the custom of purdah strictly limits the Afghan woman's access to the formal market.

These examples introduce two separate issues. One is the diverse range of economic activities women perform in addition to/or in place of agricultural labor; the other concerns women's position to access new technology. Because the production and sale of crafts is considered to be an extension of women's traditional activities as artisans, it is perceived as a supplementary rather than primary source of household income. As such, women view it as a business or independent profession and often perform these activities in an individual and ad hoc manner, utilizing traditional inputs and production techniques. They are neither concerned nor aware that the introduction of new technologies could enhance their productivity and improve their competitive status in the marketplace. These activities could be upgraded and prove to be economically viable if the women were organized and provided with new inputs to production (see also the case of urban Egyptian women working in the informal sector. Youssef,1980).

In contrast the experience of a mango processing cooperative in Pespire, Honduras,demonstrates women's ability to recognize the need for new technology and articulate their demand. After a very successful first year where the women sold all of their mango puree, they doubled production (at 85% of the original cost) the following year. However, the women were only able to sell half of it. The inability to expand sales was

attributed to, first, the lack of a refractometer necessary for product quality control and second, the limited knowledge of market fluctuations, demand cycles, and competition factors (Buvinic, 1980). This example is significant in several ways. It clearly illustrates the importance of the processual dimension of technology. The women although unable to purchase it, were aware of a device called a refractometer; of itsfunction, its critical role as an input to production, and its use in providing them with a competitive edge and increasing the likelihood of success in the marketplace. Further, it shows a commitment and a knowledge necessary for the creation and articulation of demand. The ability to translate this knowledge into a need also means that women are one step less dependent. Although unable to purchase it,the women were better off than if they weren't aware of the refractometer. Finally, it indicates the existence and significance of constraints. The women knew the technology needed; however, neither the channels for its provision nor the women's economic leverage for acquiring it were sufficient to secure access.

Modern Sector Production: Women are not exclusively engaged in subsistence agriculture, small-scale production, handicrafts or the informal sector, but also work in modern sector activities. However, within this sector they occupy jobs which are low paid, require few skills and have little potential for advancement. Women are usually found at the beginning and end of the production process in jobs which are the least technologically related.

Important in the following illustrationsis the limited nature of women's involvement in these modern sector occupations. When women are drawn out of subsistence production they have not been integrated into

jobs which directly utilize technology. Rather, they are used selectively to support the technology intensive stages of production. This peripheral involvement allows little opportunity for future mobility, and the skills learned in these supportive activities are not applicable to other positions in the production process or outside occupations. Generally speaking, women are found in those industries which require few sophisticated technical inputs such as crafts, food, clothing and light leather industries. They are less active in high technology industries such as wood, metal, chemical, steel and iron plants (ILO, 1980; Castillo, 1977). When women do work in these plants, they again are found in the least technical positions. For example, although women make up 90% of the work force in an electronics factory in Malaysia, their primary activity is to examine tiny electronic parts through microscopes (Grossman, 1980).

In Mexico, women working in textile factories were found to be in the least technical jobs, e.g., preparing parts and packaging finished goods in the beginning and last stages of production. The task of assembling items, typically a stage permeated with technology combining the preparation done by women, requires advanced technical skills and was usually performed by men (Scrinivasnan, 1979).

In the more modern textile factories, the proportion of women employed is on the average lower than in other industries due to greater capital and technology intensity. Of the women who are employed in these more automated industries (less than 10% of the workers), none work in the technical, mechanical or managerial operations (Scrinivasan, 1979).

In a modern match factory in Pakistan, women workers were found to have less direct involvement with the technology intensive aspects of production than their male co-workers: women filled the match boxes by hand; men working with machines formed the match heads (Hafeez, n.d.).

A study of the food processing industry in Thailand found that while men worked in skilled jobs, women filled all of the unskilled and semi-skilled positions in the pineapple canneries and plantations. Women's jobs included sorting fruit, skinning pineapples, and checking the machines for processed pineapple remains (Thosangran, 1978).

Thus women's involvement in agricultural, non-agricultural, urban informal and modern sector activities reveals an extensive use of outdated technologies and an inhibited access to new technologies. Women generally perform supporting roles in the context of advanced technologies.

The next section will examine the inherent obstacles in women's current relation to new technology (for presently engaged-in economic activities), and those inhibiting access to the kinds of technology which would enable them to become full participants in the modern sector.

B. Constraints in Women's Access to New Technologies

The introduction of new technologies in the development process is usually discussed in terms of its negative impact on women. This approach almost seems to imply "purpose" and "selective isolation." Technology itself is perceived as a "force" impacting directly on women by displacing them from the land and agricultural activities in rural areas; and by drawing men out of traditional agricultural work and into the cash/modern economy, indirectly burdening women by increasing their responsibility for the maintenance of the household.[3]

It has been well documented that with the introduction of new technologies, labor displacement and increased work burdens for women have occurred. However, these problems are not created by technology per se, but rather by not considering changes in the social and economic systems prior to its introduction.

If we are to understand what technology is and what it can and cannot do for upgrading the socioeconomic position of women, technology must not be looked at as a "force" or as a "thing," but as an intrinsic and necessary component of every level of development. Technology, from the simplest to the most sophisticated, is generated, employed, adapted and discarded within continually evolving systems of production. Technology affects the social and economic contexts of its use as well as modifies future technology needs. Women's relation to technology, must be investigated in terms of the structure in which technology is used and channeled. It will be argued that the primary constraint to women's "access"[1] to technology is not due to technology itself, or to any denial unique to women. Rather, because of women's place in the structure of technology use, they have not been in <u>positions</u> to have <u>access</u> for the following reasons:

1. The existence of dual systems of production, cash and subsistence, and the generally exclusive participation of men in one and women in the other.

2. The nature and extent of women's demand for "new" technology, and her leverage for demand as based on her possession and control of material assets (e.g., land, cattle, jewelry, and other forms of capital).

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[1]Recall the definition of access Page 3 of the Introduction

3. The project focus of development programs introduced by national governments, bilateral and international agencies, and private voluntary organizations.

4. The particular goals of country governments and their chosen strategies for achieving them.

1. Constraint One: The Dual Economy and the Sexual Differentiation of Labor

In many developing countries the development of agriculture is characterized by the evolution of dual systems of production, modern and traditional. Production in the latter is typically small scale, labor intensive, utilizes relatively simple technologies and produces primarily subsistence food crops. Modern production is often large scale, capital intensive and produces primarily for outside markets.

The evolution of these systems is characterized further by the participation of men in cash crop production and women in subsistence activities. In terms of the individual household, this division of labor and dual production system has influenced the definition of responsibilities and decision making on the basis of sex. The following discussion will illustrate how current support of cash crop farmers continues to reinforce the channels of technology distribution created in the historical process of development.

Based on perceptions of who were the primary economic providers, and who among these were likely to be the most receptive to agricultural inputs, men, especially men with a significant portion of land and capital, were often made the targets of colonial policy.

Women's fields were viewed as supplements to their husbands' and their garden plots were considered adequate for satisfying household needs. It was believed that the introduction of new seeds, fertilizers or production techniques to male heads of households would also benefit the women farmers(Staudt, 1975-1976; Carr, 1979).

Thus the small scale farmer, particularly poor women farmers, lost out on the opportunity to fully enter cash crop production and remained outside the channels of access to new technologies and the accompanying provision of credit and training.

Two government supported agricultural programs illustrate the way these channels have come to function. In Kenya, the government is reluctant to target programs to farmers who haven't a certain level of cash, land and perceived/or demonstrated propensity to innovate. Large scale farmers are considered a good investment risk: they have the cash or material assets to purchase new seeds, chemical fertilizers, hire new laborers, and the (extra) land on which to experiment. The very size of their plots indicates success in the past.

Small farmers lack cash, the acreage freedom to innovate and a demonstrated "success rate." This is represented in their small size farms, low returns and struggle to survive. In general, within the small farmer category, women are often in the most marginal groups. As producers with the smallest plots and least assets, women farmers are perceived as bad investments. Consequently they have not been the prime recipients of small farmer programs. The likelihood that they will be bypassed by agricultural development programs increases because, as women, the emphasis is typically placed on their reproductive rather than productive roles (Staudt, 1979).

A second illustration is the case of an agricultural program in Tanzania. In an effort to increase productivity, income and national self-sufficiency in maize production, the government initiated the National Maize Project. Farmers selected from a series of program villages received partially subsidized "product packages" (seeds, fertilizers, etc.) as well as accompanying support services in education and training in the use of these inputs. Women were selected as some of the target farmers, but purchased fewer inputs and received fewer extension agent visits than male participants. Some of the reasons cited for this contrast include the social pressure dictating against independent or assertive women; the extension agents' perception of an inherent difference in learning ability between men and women and additional social constraints defining appropriate types of male and female interaction. In some instances, even though the inputs were partially subsidized, women could not afford to purchase them. In spite of women's limited access to the new technologies, there were no significant differences in the quantity of their output vis a vis men. (Fortman, 1978)

The fact that men have come to work in areas of production distinct from women's and that they engage in the cash economy to an extent that women do not, has contributed to significant changes within the household, specifically in the structure of responsibility and decision making.

While always a woman's domain, tasks necessary for household maintenance traditionally have been completed jointly by both husband and wife. However, wages that men now earn in modern agricultural production, or through work as migrant laborers, is often seen as "theirs" rather than a joint resource which should be channeled to the household.

Evidence exists to demonstrate the tendency for men not to contribute the cash earned in modern sector activities to the household. Considered part of the "domain of women's responsibilities." men's earnings are often spent on consumer goods (e.g., transistors, watches, and alcohol), and only infrequently into buying food items (Thailand National Council of Women, 1977; Saffilios-Rothschild, 1980; Carr, 1979).[4]

This change in relations between food-production units is illustrated in the Bukoka District in Tanzania. When coffee was introduced as an additional perennial crop, and since the cultivation of perennial crops was the job of men, it fell into their domain. As it grew into a cash crop, the control of coffee trees and the income derived from its sale was entirely in the hands of fathers and sons (Storgaard, 1975-1976).

In Ghana, women are responsible for food production. If additional items are needed, the cash is obtained through the sale of surplus items from their garden; (although infrequently, it may be secured from husbands). Men derive cash income from cocoa production or from non-farming activities like palm oil tapping, masonry, house construction, etc. Women never plant cocoa themselves even though they may inherit groves from their fathers (Bukh, 1976).[5]

Thus, as women are further pressed to supplement their household income, they enter into economic endeavors distinct from their husbands (Tinker, 1979; Boserup, 1978; ICRW, 1979; Spring and Hansen, 1979).

In Kenya, income is generated by wives through marketing of garden produce, pine nuts and palm nuts (their major source of cash), and by husbands through production of coffee, cocoa and sugar cane. Husbands and wives do not ordinarily pool income derived from individual economic

ventures even though one may benefit directly or indirectly from the earnings of the other.

In conjunction with the sexual division of labor and domains of responsibility is an alteration in the decision-making processes of the household. Men and women tend to make separate farm management decisions for their respective plots and crops. In the Liberian example given above, the men use the money received from their cash crop to hire laborers to weed their gardens. Women may be somewhat restricted in their decisions, as their first priority, often perceived by themselves and their husbands, is to support the household and its members.

In the Tanzanian case, men are responsible in the cash sector; they decide upon and shop for those items which must be purchased. If the women are able to market portions of their annual food crop the income accrued is theirs (Storgaard, 1975-1976).

Due to the fact that women have been placed in a disadvantaged position as small farmers and secondary decision makers in the household, they find themselves in a vicious circle. Locked out of the channels of technology access, they can't increase their productivity, and thus their income, and thereby create a position where they could purchase additional inputs. The next section will examine the extent to which this position inhibits women's <u>demand</u> for technology.

2. Constraint Two: Women's Leverage for Demand

Because technology has been primarily channeled through the process of agricultural modernization, a process which has only selectively and indirectly involved women and which has left them dependent and resourceless, women often have not been in a <u>position</u> of access to the technology needed. Women have been left out of the system which educates and trains

farmers in technology use and acquisition. This system helps farmers understand the relation between new inputs and benefits to their productivity; become aware of the existing range of technology alternatives and develop enough expertise to select, adapt and employ these technologies to their needs (Fortman; Tinker 1979). Because women often are in a position of relative unawareness and lack the recognition of needs, they are thus unable to create an effective demand for their technology needs.

Within changing village conditions and the consequent erosion of women's status, the leverage for demand has weakened further. A major source of status was formerly derived from women's participation in food crop production and animal husbandry. The introduction of technology has made women's involvement somewhat dispensable and consequently has impacted negatively on their status within the community. Thus, the appearance of the plow in Kenya, the sickle in Indonesia, new crops in the Sudan and all the accountrements of the green revolution (HYB wheat, rice, hybrid maize, fertilizers, irrigation systems) in the Punjab have undermined women's input in traditional areas. In India, a switch from bride price to dowry is evidence that women are less valued for their economic contributions; this adds to their deteriorating status (Tinker, 1980; Billings, 1979).

Another factor inhibiting women's demand for technology is lack of capital. Given limited cash women must turn to material resources and/or credit as a means to obtain purchasing power. Evidence from Africa indicates there to be generally a low level of asset ownership among women. While animal husbandry accounts for about 45% of rural household income, several inherent factors obstruct women's cattle ownership. First, cattle raising is viewed as exclusively men's work. Second, men are in a more advantageous position to acquire cattle as

three channels of access are open to them which are not open to women: inheritance; cash income earned through wage labor; (lacking cash, women are unable to buy more than a few cattle at a time); and the option of caring for animals belonging to the herd of a larger cattle owner along with their own and thus receiving a few head as payment (Kossoudji and Mueller, 1979).

Land offers another source of purchasing power for technology. Women's right to acquire, own and utilize land are a function of traditional patterns of inheritance and allocation (e.g., either through male or female lines of descent), religious laws, wives' rights vis a vis husbands', and present day land reform laws. Yet in many instances, these channels no longer offer women a viable means for access to land. To the extent that land is becoming a scarce resource and is sold, rather than allocated according to need, traditional inheritance laws and rights of use are being eroded. Women cannot press upon their husbands or local laws to exercise her rights; nor do they have the purchasing power to acquire available land (Boulding, 1980; Fortman 1980; Mueller, 1977).

Land reform laws, while designed to allow anyone to purchase or at least petition for land use, may not alleviate women's constraints to access. Families may be allocated land, but the title to the land rests with the male head of household. As a result, women often do not have rights to land apart from the rights of their husbands (Jones, 1979).

Thus, due to the erosion of traditional laws and problems in land reform laws, land is not likely to function as a means for women's access to technology.

Credit will be discussed in Section II but mentioned briefly here insofar as it inhibits women's purchasing power once they do have access to technology channels. In an evaluation of the national maize project

in the Morogoro and Arusha Regions of Tanzania, the extension of credit theoretically open to men and women revealed the following difficulties. Credit for the purchase of new seed strains was based on the sale of crops. However, since the maize sold is primarily a subsistence surplus, sales are not always consistent. Thus, producers were constantly dependent on adequate sales to obtain credit to purchase the new seeds. Credit-worthiness was also determined by the village chairperson's recommendation. Local attitudes frowned upon economically independent and assertive women, and the majority felt cash cropping to be a man's domain. Even if they had collateral for credit, these social pressures may have indirectly influenced women's eligibility (Fortman, 1979).

Alternative Channels of Access - Women's Informal Networks: Because women are not in the main channels of technology acquisition, they develop their own networks for access. A study of organization and communication channels in rural Kenya reveals the phenomena of the barazas - weekly meetings provided by government supported extension staff. At this time men receive agricultural information, advice or witness demonstrations. Conversely, women attend meetings offered by church groups, mutual aid societies or communal agricultural groups created for joint planting, weeding and harvesting. In these meetings women exchange tips on various agriculture related topics (Staudt, 1975-1976). Another study reveals that women adapt networks traditionally used for celebrations and funerals for economic and informational purposes. At the same time, women's attendance at formal extension meetings (arranged by the villagers themselves) were found to be infrequent. If they did attend, their participation was passive (Storgaard, 1979).

Yet in another context where extension agents specifically sought to inform small farmers about hybrid maize practices and associated spacing, weeding and planting, many women continued to hear about practices from their neighborhood groups and trading contracts (Staudt, 1980).

When women migrate to the cities, informal networks are often retained and employed to gain an economic leverage in the new urban environment. In Kenya, women migrants in town brew and sell beer, a drink which originated in the countryside. By utilizing familiar tactics of group initiative they begin to create an economic foundation for themselves and a means to gain entry into either formal or informal urban labor markets (Watchel, 1975-76).

Thus, although they are not part of the primary system through which technology is supplied, women have employed existing networks and generated new channels of access. However, their informal networks are unlikely to be strong enough to create an effective "demand" for the technology they need. Most technology has been channeled through a supply-push process, such as government programs or large scale private entreprenuers, ans as illustrated, women have not typically been receivers of technology supplied in this manner. As currently implemented, this approach is structurally inadequate for meeting women's technology needs. In accessing technology to women both the demand-pull and supply-push approaches need to be re-evaluated. What has been the record in specific attempts to increase the flow (in a supply-push manner) of technology related projects aimed to improve the productivity of goth men and women?

3. Constraint Three: Programmatic Focus of National Governments, Bilateral and International Agencies

The primary channels introducing and supplying technology to rural areas are national governments, bilateral and international agencies. At the local level programs are generally implemented through government officials and private enterprises. While these channels are often more effective than those induced by demand pull factors, there are several problems inherent in current approaches. Because men historically have been drawn into cash crop production, they continue to be viewed as primary economic providers and good investments. As such, most new agricultural technologies are targeted to men for use in cash crop production. Women are most likely to receive technologies pertaining to their roles as mothers rather than producers. Even when programs focus on women's role as producers, they are usually extensions of household activities. Attitudes concerning what men do and should do vs. what women do and should do continue to underline the focus of development programs and are illustrated by the following examples.

Small Scale Farmer projects: Specific projects designed to increase small farmer productivity are often targeted only toward men farmers. While not explictly men's projects, at the admitted exclusion of women, these projects do not reach women to the same extent as men. Factors contributing to this exclusion include: women are not viewed as producers by planners or project coordinators; extension agents are usually male (thus contact with women may be ineffective or restricted); visits by extension agents to explain technology use are often not coordinated with women's time schedule; occupied with farm production and household maintenance activities, women may lack the time and/or the flexibility to

attend the extension agents' lectures; and women do not have the capital or collateral to purchase the technology inputs.

In the example of Tanzanian maize production given earlier, beliefs concerning how women should behave were cited as factors inhibiting their involvement in the project. The women also had difficulty in obtaining credit to purchase the new technology. Credit worthiness was determined by the village chairperson's recommendation. Because male heads of households typically made decisions concerning expenditures for inputs and women producing independently were frowned upon, women farmers were not likely to receive recommendations for credit (Fortman, 1979).

In the agricultural and the Practical Farms Schools in Sri Lanka and in new agricultural schools in Egypt, the ratio of male to female students is very high (25:1 in the case of Egypt). While there is no rule which explicitly restricts women's enrollment, perception of appropriate behavior, from both the students and the administration's perspective, inhibit women's participation (ICRW, 1980c).

Women's Projects: Generally speaking, there are two groups of projects targeted specifically to women, one group which could be characterized as "welfare projects," the other "productivity projects." The first group recognizes and aims to support women's role as nurturer and provider of family health and nutritional welfare. Women are targeted for training in child care, birth control, nutritional information and food preparation. When technology is introduced, it generally is in the form of sanitation facilities, irrigation systems, or household implements such as cook stoves, pit latrines, etc. The primary purpose of these technologies is not necessarily to free up women's time from burdensome tasks and allow them to enter into income earning activities, but rather to improve the health

of the family (World Bank Projects and Women, March 1979). Two-thirds of all USAID women in development projects can be classified as family welfare programs and only one-third as productivity increasing programs. (Youssef, 1980). While these projects are important, the current objectives could and should be expanded to emphasize the development of technologies to directly increase women's earnings.

A second group, "productivity projects," in theory attempt to do this. However, they aim at increasing women's economic participation through development of crafts (e.g., rug weaving, basket making, clothes sewing); animal husbandry (e.g., duck and goat raising) and petty marketing of dairy products and farm surplus. From one perspective, these clearly are marginal activities outside the modern sector. They employ simple technologies, afford little profit for energy expended and offer a limited potential for capital accumulation. Even if it is accompanied by cooperative and credit support, this focus will have a somewhat limited effect on raising women's socioeconomic status. It does, however, provide short term convenient measures to address women's immediate need for income earning activities. Given few alternatives in the short run, these activities are legitimate insofar as they:

i) Build on existing or easily learned skills, utilize low cost indigenous materials, allow a return on investment and afford some cash remuneration as long as women have control over the organization, the management and marketing of their products (Starkey and Dulansey, 1977);

ii) Are introduced into a steady and expanding market;

iii) Maintain the competitive position of women. This is possible only insofar as technology is channeled into these local production processes;

iv) Are accompanied by effective infrastructural support; and

v) Are effectively integrated into larger development programs. "Isolated" women's projects or ad hoc components tacked on to other programs serve to mask the real factors inhibiting women's access to technology. When supplied solely with sex specific technologies, women are seen as a separate issue, and not as producers with particular resource requirements. When separated out, women's need for technology competes with other interest groups for political attention in the power/decision making groups within governments (Papanek, 1980).

A good example of income generating projects which effectively has avoided the crafts approach is a World Bank credit project in El Salvador. Women participants used the credit to purchase technologies needed to expand their businesses. The acquisition and use of new tools and equipment increased the women's productivity and allowed for their entry into new businesses such as a corn mill, a clothing store, an artificial flower business and a butcher's shop (Blaney, 1979).

4. Constraint Four: Women as Subjects of Technology: National Level Planning

The preceding discussions have outlined structural, occupational and financial constraints preventing women's access to technology. Without changes in development strategies, it is unlikely that women will easily move from low technology production in the subsistence sector into the modern economy; benefit from modernization of the agricultural sector through a "trickle down" process or "spread effect" ; or be in a position

to know of, acquire, adapt and utilize technology. Direct measures for meeting women's technology needs are required. However before considering what measures could be taken, it is important to understand current attitudes toward technology transfer and development by governments.

Governments can be viewed as buyers as well as providers of technology in at least three ways. They purchase technology in the international marketplace; they generate technology (given the limited development of research in the private sector); and they facilitate technology transfer between local purchasers and bilateral/international agencies and private voluntary agencies. As buyers, developing country governments can only purchase the technology currently available to them in the marketplace. The existing problems with technology transfer agreements (e.g., limited decision-making leverage by national governments, packaging requirements and hidden costs/or transfers) also pertain to technologies appropriate to women's needs.

Government's ability to both generate and facilitate the transfer of technology relevant to women's needs is also contingent upon their experience in technology choice, and the existing level of technology build-up within the country.

This requires institutional mechanisms to identify demands for technology change; gear technology to societal needs; balance social, political and economic implications of technology choice; determine suitable means of action; plan the appropriate phases of implementation and establish a permanent means for translating needs into policy action (Hetman, 1978).

To the extent that these institutional mechanisms are generally undeveloped and do not adequately meet overall technology needs, governments cannot effectively address the technology needs of women.

If developing country governments are to seriously address the immediate and evolving technology needs of women, they must find a way to reconcile the technology demands of the modernization process already underway with those of its female population. A first step in this direction is to emphasize the interdependency of the "modern" and "traditional" sectors of the economy and to view their needs as complementary rather than opposed. The dichotomy of occupations and associated technologies (i.e., high technology, and "modern" concerns men; low level, rural based technology involves women) can be directly affected if technology is introduced on the basis of 1) the production needs of all producers, large and small, male and female and 2) its contribution to explicitly increasing productivity.

There is a need for technology appropriate to local labor, land and capital resources; that is, labor intensive processes in the modern sector, and the development of new and improved techniques and products in the traditional sector.

Technology is appropriate when it can potentially create the beginnings of an economic leverage and a position for poor individuals to gain a future of sustained access to additional productive resources. Technology is appropriate when it is deemed as a priority need by the users and can be understood, used and adapted within their current context. Subsistence farmers cannot be catapulted into the modern sector, but they can be equipped with the technologies which could lessen their marginality through an increase in productivity. Thus while structural problems remain (i.e., dual systems of production; exclusive channels of technology use and distribution, etc.), the introduction of new technology immediately impacts on productivity in areas where the poor are most vulnerable. To this extent, these measures do reduce dependency, mar-

ginality and directly enable them to address their greatest constraint, that is, their limited position for access.

Given these constraints, what generally is current government policy concerning the technology needs of women and the obstacles inhibiting their access? National level policies in most developing countries do not now focus on women as specific groups of technology users with specific technology needs. For the most part, this absence is not due to any explicit language or legal provisions barring women access or attention; rather, it is due to a simple lack of recognition. And if women are realized as technology users, this realization is rarely translated into policy. Thus, in spite of existing attitudinal and structural constraints, women's presently "invisible" technology needs must be made visible through national level policy and followed by realistic implementation (Larsson-Bergom, 1979; UNCSTD National Papers, A Review, 1979). To add to these efforts the subsequent recommendations are offered.

C. Policy Recommendations for Improving Women's Access to Technology

National Level: Women need to become involved in the planning and decision-making processes at the national level; in formulating long term plans to meet women's technology needs at all levels; in designing policies to ensure the careful selection of appropriate and adoptable technologies.

1. The number of available women scientists and researchers (among other professionals) working within government agencies or public/private organizations should be determined and specific recruitment of these women into policy-making positions is needed.

2. Specific government educational funds should be earmarked to provide scholarships for women to enter into scientific and technological fields (e.g., natural sciences and engineering, transportation and communication). Financial incentives for women would address both monetary constraints and the stereotyping of certain career paths for women. In the long run, this would prepare more women for policy making positions.

3. Career guidance and curriculum changes which encourage women into science fields should be established in secondary and intermediate schools.

Policies supporting the immediate and long-range involvement of women in Technology Planning:

4. Initial and continuing assessment of women's technical needs at all levels in all sectors must be made and these needs must be incorporated into long-range development planning.

5. Assess the extent and nature of research conducted on the particular technological needs of women so that gap areas could be addressed and funds allocated.

6. Evaluate the extent and distribution of women's enrollments (and trends) in technical training schools and in the science and technology areas in universities.

7. A long term study investigating the extent of adverse effects of capital intensive technologies and development on women.

Given that women in other developing countries face similar problems due to the impact of technology in industry and agriculture; and their lack of direct, productive involvement in the process of development, national governments should encourage and facilitate communication among

women's organizations in neighboring countries by:

-- sponsoring and hosting inter-country meetings;

-- organizing and financing feasibility studies for prospective joint projects

-- exchanging information on current women and technology research.

Urban Sector:

8. Governments should provide direct financial incentives (e.g., reduced loan rates, tax breaks, product subsidies) to industries which organize technical training and on-the-job instruction to women. Such training would undermine the excuse that women are unskilled in the use of technology and therefore are only suitable for the least technical jobs.

9. Governments should initiate mass media campaigns within and outside the work place promoting women's unimpeded participation in all industries, at all levels in order to break down the sex stereotyping of women's roles at particular points in the production process and in particular industries (e.g., textiles).

10. Governments should create a set of guidelines for all existing industries (those over which they have control) mandating minimum working conditions, skills training and production and decision involvement for women.

11. Governments should assess the status, wage differentials and range of occupational mobility of women workers. The assessment is initially important in that it identifies the industries critical to women, and concerns those areas where women have faced particular discrimination.

12. Governments should organize and partially subsidize a national industrial women worker's organization. Such an organization would provide a vehicle for women to voice and address their grievances; it would also provide an additional check on industries to limit their job, wage and training discrimination.

13. Governments should establish an agency to continually monitor these industries and potential offenders; impose financial sanctions for violations and maintain communication with women workers in order to address their needs. Participation of women workers in these monitoring agencies needs to be ensured.

14. Specific women owned, managed and run industries in those fields in which women have a traditional expertise (e.g., clothing, crafts, artisanal activities) should be created. Initially special assistance in financial, technical, managerial and other skills and limited market protection and credit should be provided.

15. Governments should promote and organize cooperatives for working women. In this way women selling ad hoc, daily services, or involved in petty trade could standardize their services, gain leverage for wage bargaining with their employers and develop economic independence by pooling resources for capital investment and as collateral for credit.

16. Governments should promote and introduce technologies which reduce the drudgery of household labor (e.g., household implements, utensils, storage facilities).

17. Governments should promote technologies which improve health and sanitation (e.g., water filters, pit latrines).

Rural Areas:

18. Governments should promote and introduce technologies which minimize women's underproductive tasks (e.g., water systems in rural areas, light transport facilities for the portage of water, wood, farm produce and other loads, efficient agricultural tools such as grinding mills, crop processing equipment, and energy conscious stoves).

19. Governments should organize women's cooperatives in areas where women have a history of economic involvement (e.g. selling garden plot vegetables, beer brewing, crafts and other artisanal activities).

20. Governments should immediately effect short-term, intermediary measures to develop small-scale factories owned, managed and run by women. In creating women exclusive factories, women would gain control over the processing, distribution and income gained through production and thereby become indpendent and self-sufficient.

21. Extension services (employing women extension agents) should be designed which specifically address the technological needs of women.

22. Technologies should be specifically assessed for possible increases in women's work load; in such cases that women's workload has expanded, women should receive compensation.

23. Governments should create fisheries and fish ponds, watershed management controls, and introduce sources of energy other than fuel wood into rural areas.

24. Governments should develop extension services to ensure the provision of these technologies and to train women in their use, maintenance and potential profitability.

25. Governments should create a base-line data collection on the technologies women are currently using; technologies which are critical to their immediate needs and those which will be needed in the future.

26. Governments should introduce an institution for continual monitoring and assessment of introduced technologies and their effectiveness in furthering women's economic involvement.

27. Governments should create feedback links between local communities and research institutions in order to make the latter responsive to women's changing technical needs.

28. Governments should provide financial compensation to those women who have lost land in reformation and modernization schemes.

29. Governments should create and initially finance cooperatives in existing women specific activities (e.g., duck raising and poultry production). In this way, women could establish income producing enterprises of their own, increase their financial stability and reduce dependence on agro-industries fluctuating demand for labor. Women should also be provided with knowledge of basic financial, technical, marketing and management techniques.

30. Governments should provide primary transportation from rural areas to urban markets. Rural women could then receive a higher rate of return for their off-farm products and garden produce than available in the rural areas and would secondly receive exposure to urban markets.

31. Governments should undertake extensive research on quantifying the number of women actually displaced due to the modernization of agriculture, whether they found employment, if so, in what activities, and their long range trends and employment opportunities.

32. Governments should assess all agriculture related technologies for both the degree of labor lost (by the replacement of manual tasks) and the rate of absorption in agro-industry.

33. Governments should investigate and develop a mechanism for long term monitoring of women's working, wage and mobility conditions in agro-industries.

II. WOMEN'S ACCESS TO CREDIT

Credit plays an important supporting role in the process of development as a means for individuals and groups to acquire and mobilize productive resources. However, not all groups have equal access to formal sources of credit. Poor groups in general, and women among the poor in particular, face restrictions in access to credit and financial institutions. These restrictions limit the potential for increasing the productive contributions of these groups and further distort the distribution of income and asset ownership.

The importance of providing women access to financial institutions is based on their need for a means to increase productivity and earnings to improve individual and family welfare. Credit can be used as a vehicle to raise productivity in both household and market activities. Capital inputs in certain household activities can increase their efficiency and release women's time for income generation. In some cases, capital can be used to commercialize household production (e.g., cooperative day care centers, mechanized food processing). Credit directed to the market activities of women is needed both to enhance and stabilize income in current areas of employment and to create opportunities for income generation in new areas. Measures to increase the productivity of women's market activities become particularly important given the growing number of households which depend primarily on the earnings of women household heads and the increasing importance of secondary earnings of women in poor households headed by men. Because most existing formal credit programs do not reach women's economic activities, improving their access can lead to increases in productivity and household income that would otherwise not occur.

Despite limited access to formal financial institutions, women are extensively involved in informal credit systems including moneylenders,

pawnbrokers, relatives, shopkeepers, middlemen, and rotating credit associations. Thus, participation is well documented throughout the developing world, and shows that women do mobilize private savings for productive purposes. As users of credit and as savers, women are particularly important resources in the mobilization of capital for development.

Planning for the development of financial institutions in Third World countries must take into account women's active role as borrowers and the existing constraints limiting women's participation in formal borrowing systems. Strategies to improve women's access to credit should be planned in the context of the overall development of viable financial institutions which provide both savings and borrowing opportunities for men and women alike.

A. Constraints to Women's Participation in Formal Borrowing Systems

Clearly, part of the problem in women's access to credit is the unsatisfactory performance of financial markets as a whole. Strategies over the past 20 years to accelerate economic development have focused on the rapid expansion of financial services and have promoted special programs with concessionary interest rates and non-market loan rationing to targeted groups not eligible for credit on their own (for example, small farmers). Large amounts of capital are often "force fed" by central banks to certain regions, with requirements that the money be allocated to special groups. Little emphasis is given to mobilizing indigenous resources or building long term, self-sustaining financial institutions.

Many of these programs have poor track records, and have been criticized for distorting and undermining the potential development of solid financial markets. Low interest rates are thought to retard savings and capital formation, cause inefficient allocation of resources, and fragment

financial markets. As a result, a wide range of interest rates and a lack of competition between formal and informal lenders are generally found across financial markets. Credit programs are also ineffective in mobilizing savings because in many cases deposit facilities have not been established. The heavy administration and regulation of formal credit programs for the poor have further reduced their effectiveness and have led to resistance by formal institutions to lend to special target groups. Other problems include a shortage of well trained people to fill positions in financial institutions, high administrative costs, slowness in making loan decisions, poorly designed repayment procedures, and lack of coordination between credit programs and other development efforts. All of these problems result in high transaction costs for both lenders and borrowers and high default rates, which further reduces the "vitality" of programs. With these problems, after the original funds set aside for special programs are depleted, the programs often are discontinued (Adams 1979).

More specific constraints in access by the poor to formal credit and financial institutions in developing countries have been offered. Many of these constraints may be particularly limiting to women:

- The concentration of control over resources is offered as one major constraint. The economically powerful deny the poor access to significant amounts of formal credit (Adams and Nehman 1977). The limited resources which are made available, however, are more likely to be directed to men since economic control is apt to be held by them.

- Supply allocation problems within financial institutions also limit access to credit. As mentioned above, concessional interest rate policies and large lender transaction costs for servicing small or new borrowers discourage lending to the poor. Women are particularly prone to these constraints because in most cases they are both new

and small borrowers (given the nature of their economic activities and credit needs).

- Limited demand for formal credit by the poor has also been offered as an explanation for their lack of credit use. Poor groups, it is argued, lack profitable investment opportunities, are unaware of the availability of formal credit, lack experience in using formal credit, or are too intimidated to request formal loans. Some of these reasons are particularly important in explaining the limited demand for formal credit by women. Given sex segregation in the labor market and occupation structures, women may lack more profitable investment opportunities than men. In some cases women may be unfamiliar with the concept of borrowing money. Also, publicity about credit programs is generally channeled through men's information networks rather than women's (Staudt 1976). Because they do not know about credit programs, women therefore may not apply as frequently. Lack of experience in formal settings and cultural constraints may also result in more limited demand for credit by women. For example, women are often restricted by social norms in interacting with men in formal situations. Therefore they are likely to be more intimidated by male bank officers.

- Higher total borrowing costs may also strongly affect the willingness of the poor to seek loans from formal lenders (Adams and Nehman 1977). Borrowing costs include interest rates, changes in purchasing power of money and transaction costs. While the first two factors will be the same for both sexes, women's transaction costs in many cases may be higher than men's or even impossible to meet. This may explain women's

lack of formal credit use. Three kinds of transaction costs can be incurred by borrowers:

i) Loan charges collected by the lender beyond interest payments, through application fees, forced purchase of lender services, service fee, bribes and closing costs. In general these elements of transaction costs will affect men and women equally. However, in the case of paying bribes, women may be severely restricted because of the impropriety of women bribing male officials.

ii) In some countries the poor may be required to negotiate with someone outside the formal lending agency before a loan application is formally reviewed, such as an extension agent or local official. Women may be inexperienced and/or socially restricted in negotiating with these individuals, who most often are men. Gifts or bribes may also be involved, and again, there is a question as to whether or not women are able to afford these, or if it is appropriate to offer them to male officials.

iii) The time and travel expenses required to visit a formal lender on a number of occasions to negotiate the loan are likely to be the largest and most important transaction costs. Small and new lenders generally are required to visit a formal lender a number of times to negotiate a loan (these costs are incurred even if the application is denied) and to withdraw portions of it. Filling out papers, waiting in line, and traveling long distances are very time consuming. For women, it may be impossible to travel long distances alone from rural areas to banks in towns. Lost work time, especially

in peak agricultural periods, and work requirements which cannot be foregone, such as child care or other household tasks may become particularly important barriers for women.

Even if formal interest rates are low, given the substantial transaction costs involved for borrowers (especially those costs incurred before the loan is approved and with the chance it will be denied) total borrowing costs for small formal loans may be sufficiently high to make it more rational for an individual to seek a loan from an informal source. These restrictions and the higher transaction costs in obtaining formal credit may help to explain the active involvement of women in informal credit systems.

- Another major obstacle for women's access to formal credit is collateral when it is required in the form of a house, land or other property. In many cases, male heads of household hold title to land or other property and are required to sign for loans, making women's independent access to credit impossible. Where businesses are accepted as collateral, women may not be considered good credit risks because they are engaged predominantly in small scale informal enterprises and may not have documentation of formally registered businesses.

- Many formal credit institutions do not have programs that are responsive to the types of work done by women. The size, terms and repayment schedules of loans, and the hours of operation of the lending agency may be inappropriate for women borrowers. Banks may also require larger minimum savings deposits or down payments than those women can easily make. In many systems, the repayment regulations are inappropriate in frequency and duration for women's needs. For example, in credit programs in both Africa and Asia, women have expressed a

preference to pay back loans with frequent small deposits for fear that the money will be used elsewhere (Buvinic et al, 1979). In some cases, terms for lending in rural areas are designed to accommodate agricultural activities or farm activities which differ from men's.

- Social customs also may restrict women's participation in modern credit systems. For instance, many credit cooperatives are not open to women, at least not without their husband's formal approval (Aziz 1977). Even if legally accessible to women, social norms may bar their participation in sexually mixed groups. Additionally women share with men common problems such as dealing with paperwork, understanding complex regulations and unfamiliar procedures. Higher rates of illiteracy among women further restricts their access to modern credit systems.

B. The Active Role of Women in Informal Borrowing Systems

While women have restricted access to formal borrowing systems, they are quite active in "informal" borrowing systems. Informal sources of capital include relatives, money lenders, pawnbrokers, wholesalers, middlemen, shopkeepers and rotating credit associations. Through their involvement in these systems women gain experience both in saving and borrowing, and demonstrate a willingness to pay interest and credit worthiness. Some of the positive elements of these systems if incorporated into the design of formal credit programs, can make them more effective.

The importance of relatives as sources of credit for women is widely acknowledged. Women in Bangladesh (Abdullah, n.d.) and the Phillipines (Ledesma, 1977) borrow rice from richer relatives to tide them over the last months before a harvest. Payment is generally in kind, and although no formal interest is charged, it is usually implicit in the value at which

these goods are priced. In Bangladesh, women borrowers are obliged to render a future unspecified service to the lender. Kenyan and Nicaraguan women at times get their start in business with loans from relatives (Okeyo 1979; Bruce 1979). However, because the availability of such loans depends on the resources and good will of relatives, not everyone can count on them.

Borrowing from moneylenders and pawnbrokers is at least as widespread among women as among men. Reference to this kind of lending to poor women has been made in India (Hariss, 1979; Jain 1975) Indonesia (Germain et al 1978; Milone 1978); Mexico (Chinas 1973) and Nicaragua (Gillespie 1977; Hagen 1972). Moneylenders may be more desirable sources of credit because there is little or no paper work involved, money is immediately available, small amounts are available, collateral requirements are more flexible, and the borrower has fewer restrictions in using the money. Moneylenders are also more flexible about repayment, and usually more understanding if a loan repayment is late. Pawnbrokers allow women to use assets which they control, such as jewelry, ornaments or gold as collateral to raise cash. As mentioned above, despite the higher interest rates compared to formal sources of credit, when assessing total borrowing costs (including transaction costs and changes in purchasing power of the money over time) it sometimes makes more sense for individual women to borrow from moneylenders than from formal institutions. However, the relatively high costs (up to 120% per year in Nicaragua) and limited amounts of credit available to individual borrowers constitute considerable limitations on productive investment using these sources.

Wholesalers, middlemen and shopkeepers also provide women credit at times, both for household provisions and for commercial activities (marketing, petty trade, sale of prepared foods, etc.). One reference indicates that urban women in India pay interest ranging from 10 percent per day to 25

percent per month (Jain 1975). Women farmers also may receive credit in kind from middlemen in the form of seeds and fertilizer.

Rotating credit associations are common throughout the world as informal institutions which effectively promote both saving and borrowing. These associations consist of "...a group of persons who agree to make regular contributions to a fund, which becomes the property of each contributor in rotation." (Lewis, 1976 p.150). Frequently one sex predominates, or group members all belong to the same sex. The important intermediary role of these organizations in mobilizing capital for development has been described by Geertz (1962) for selected cases in Asia (East Java, Japan, China, and Vietnam) and Africa (Cameroon, Nigeria) and also by M. DeLancey (1977) for Cameroon. Women's rotating credit groups exist throughout the world, and have been documented among other places in Malaysia and Korea (Aziz 1977); Indonesia (Milone 1977; Papanek et. al. n.d.); Cameroon (V. DeLancey 1977); and Nigeria (Okonjo 1979). These associations are often a very effective way for women collectively to meet their credit needs by providing mechanisms to both save and borrow during crucial periods.

The features of two types of rotating systems in Indonesia suggest what women see as important in a lending institution and why they create such institutions (Milone 1978). Arisans are composed of groups of women, usually neighbors, co-workers or friends, who meet together on a monthly basis. At each meeting members contribute an agreed upon sum, lots are drawn, and one member collects the pot. After each member has had a turn, the group is disbanded, but may be formed again by the same or another group of women. Arisans are open to all kinds of women; traders, farmers, wage earners and entreprenuers. The money is used by women for various purposes, including education for their children, investment in businesses, building or improving shelter, clothes or food.

A simpan pinjam is another type of informal savings and loan association. Each member contributes whatever amount they wish, and whenever members need a loan the money which has been collected is made available to them. The recipients agree to repay the loan within a specified time period, usually a few months, at a low rate of interest. The profit from the interest charged is divided among the members at the end of the year. A similar system is described by M. DeLancey (1977) in Cameroon.

The advantages of these informal rotating systems are that they encourage savings by members, there is no paperwork or collateral involved and there are no restrictions in using the money. By being within the community the capital is easily accessible and in emergencies generally available to women. In addition, these groups often have a social function which is equal in importance to the economic one.

Despite their advantages, there are situations where rotating credit systems do not work. Effectiveness often depends on established community groups, non-competitive worker's groups, ethnic or linguistic ties. Lewis (1976) points out that they do not work among market women of Abidjan, probably because women are from different ethnic groups, and compete for sales with each other in the market. Gulati (1978) reports a similar problem among women in an Indian squatter settlement.

In general, the limitations of informal borrowing systems center on problems of high interest rates, and the inconsistent and relatively small amounts available. In some cases informal borrowing may be used as a lever of exploitation when capital is owned by relatively few individuals, and may result in a vicious cycle of indebtedness.

Although informal credit systems are not always sufficient sources and mechanisms for the provision of credit to women, they do show first, that women use credit and suggest what features in a formal women's credit program would be desirable and workable. Second, they show that women save and will

deposit their savings in institutions they trust. Credit programs for women which have incorporated the positive elements of informal systems into their design have been quite successful (Buvinic et. al 1979).

C. Planning For Improved Access to Credit: Successful Programs for Women

Given the potential contributions of women through the use of credit, their current restrictions in obtaining formal credit,and the problems in depending entirely on informal sources, there is a need for planning and designing programs which better serve women's needs. There are several examples from developing countries of successful credit projects which may provide some insights and suggestions for important elements to include in efforts to improve women's access to capital resources.

India: One arrangement that has successfully provided women credit is the Mahila or Women's Bank established by the well known Self Employed Women's Association (SEWA) of Ahmedabad, India. SEWA is a trade union of 10,000 poor women who are self-employed as vegetable vendors, junksmiths, handcart pullers, used garment vendors and other such petty traders.

In 1974 SEWA organized the Mahila Bank to provide credit to members who were finding it difficult or impossible to obtain loans from outside sources. For 10 rupees (US$1.32) a woman can become a shareholder in the bank, and is eligible for loans from 250 rupees to 1,000 rupees (U.S.$33-132). To qualify she needs two guarantors, usually other shareholders and loanees. The loan is deposited in an account and withdrawn as and when necessary. With the loan, the women are issued a passbook and required to pay back a fixed amont of rupees every month. There is a one-half percent rebate if the payment is on time, and a penalty if it is not.

The Mahila Bank is a kind of intermediary organization between members of SEWA and the national banks which have resisted servicing these women in part because of the administrative problems in taking care of so many small

loans. The constraints women faced in dealing with the banks related to their inexperience in dealing with formal situations, their lack of collateral, illiteracy, and consequent problems in filling out required paperwork by banks, and the intimidating atmosphere. The lenders considered the women who are self-employed in the informal sector to lack profitable investment opportunities. The Bank has about eight employees who help the members in making savings deposits and in taking and repaying loans. The Bank's staff works with the women in filling out loan application, submits them to banks, and in turn, pays out the money to the women. The willingness of formal banks to work with SEWA is based on the credit worthiness of the Textile Labour Association of which SEWA is an offspring. Information concerning the loan program is disseminated through women benefiting from the loans, local women leaders and SEWA branches which have been set in communities.

By the end of 1976, 8,000 women members had received 3,000,000 rupees (U.S.$392,000) in credit. An analysis of 2,000 borrowers showed that 44 percent paid their installments on time; 43 percent missed 3 to 6 installment; and only 13 percent missed more than 6. Women used the money to pay off debts, or to buy capital inputs for their trade. For example, handcart pullers used loans to purchase carts which they previously rented for 50 rupees per month. The bank also provides an opportunity for women to save, and by 1977, 719,000 rupees (U.S.$94,908) had been deposited (Jain 1975).

The Mahila Bank is an example of a organization which plays an intermediary function between a group of working women and formal banking institutions. The women's bank has been successful in assisting women in overcoming several of the constraints they commonly face in obtaining credit. Women increase their demand for credit because they are aware of its availability; and knowledge of productive investment opportunities has improved through the organization of women in the same categories of self employment.

The intermediary role also reduces transaction costs for both lenders and borrowers. The women are provided with a supportive and unintimidating setting in which to carry out their business. The Bank also helps women to overcome their problems of illiteracy and lack of collateral. As part of a larger women's organization, it is able to utilize existing information and administrative channels, and provide other important support services. The reputation of the organization and its affiliates has provided important support in terms of establishing women's credit worthiness with official lending institutions.

El Salvador: Another credit program which successfully meets women's needs is sponsored by the Federación de Cajas de Credito in El Salvador as part of a World Bank financed small-scale business component. The program is designed to provide a revolving line of credit to increase the incomes of existing small scale enterprise such as stores, family based services, clothing manufacturing and sales, handicrafts, tailors, and shoe manufacture and repair. Small loans are made available to new borrowers for working capital for the purchase of tools or equipment, or for construction and improvement of workshops.

Although not originally intended as a women's program, women entreprenuers hold 85% of the current portfolio of 700 loans. This is in part due to the fact that women are very active in the types of businesses that the program is designed to serve. The outreach efforts have been successful in reaching women by concentrating in the largest and poorest settlements, where there is a high percent of women headed households and women working as entreprenuers. Nearly all recipients are part of organized groups which provide excellent starting organizations for other activities, such as buying, selling, saving, technical assistance, etc. Groups throughout the area are developing their own organizations to qualify for loans Blayney, 1978).

The program has resulted in both direct and indirect benefits. Business incomes have increased, from 15 to 200 percent of pre-loan incomes; operations have diversified; loan payment defaults have been very small; and modest employment gains have been realized in a short period of time. The program has shown there is a large demand for capital within the low income settlements of San Salvador, and that women entreprenuers will utilize credit effectively when it is available. Women are willing and able to pay market rates of interest; invest the money productively; realize increases in income and pay back loans.

The experience of both SEWA and the Federación demonstrate the possible success of programs designed to serve the needs of a defined set of economic activities of women. Credit directed to the economic activities of women rather than women per se can be an effective strategy in mobilizing resources in developing countries.

D. Policy Recommendations for Improving Women's Access to Credit

Strategies for improving women's access to capital resouces cannot be separated from the overall development of viable financial markets in Third World ountries. In and of itself, the approach of targeting credit to women or other groups will not solve the problems and unsatisfactory performance of capital markets. The lack of success in so many target group programs to date is evidence that unless more fundamental changes are made, existing problems will probably remain.

Despite the substantial amounts of money that have been fed into many financial markets in recent years, the situation is deteriorating. Indigeneous savings have not been mobilized, default rates are high and distribution of benefits are skewed. In part this may be due to the

perception of the capital originating from outside or governmental rather than local sources. People may not feel they have a stake or responsibility in paying back loans.

It is important to stress, therefore, that policies be directed to developing overall viable financial markets which provide opportunities to save along with loans and which encourage the participation of all groups. An active attempt to involve women in credit systems should be a central element of this process. Below, we suggest strategies for incorporating women's concerns into the design of credit programs.

1. Direct credit to those economic activities in which women are active and have experience (e.g., agricultural and off-farm activities of women in rural areas, such as home gardening, grain processing and small scale manufacturing; and productive activities of urban women such as the operation of small business, stores and food services, production of clothing and handicrafts, marketing and trading).

2. Make credit available to create new employment opportunities; for off-farm activities such as agro-industry, poultry raising and animal breeding; for urban activities in new areas of manufacturing, services and trade.

3. Provide credit for the commercialization of home production (e.g., food processing, clothing production, child care). At the same time, ensure that the transfer of household production to the market is complemented with other supportive measures such as the introduction of appropriate technologies, skill training and the organization of women's community groups.

4. Promote the establishment of women's cooperatives and banks as intermediary programs to mobilize capital for women's productive activities. This can be achieved through collective efforts at both the national and local levels by government bodies, cooperatives, women's organizations and associations, credit unions and banks.

5. Establish women specific credit programs in appropriate cases where male/female interactions are socially limited, or where women may feel the need to operate in a program not dominated by men. These programs should be designed as an intermediary step towards the full participation of women with men in mixed credit and savings programs.

6. Facilitate group lending as a means for women to pool resources for collateral, to share the risks and benefits of borrowing, and to overcome obstacles they may face as individuals. Group lending also reduces the administrative costs for banks and provides an efficient means of integrating training, technical assistance, and the introduction of new technologies to women.

7 Make credit available which waives collateral requirements or employ innovative strategies based on resources available to women (e.g., third party guarantors, jewelry, ornaments). One of the major obstacles women face in obtaining credit is lack of traditional forms of collateral such as land or other property.

8. Develop programs which encourage women and women's groups to save through mechanisms which provide opportunities to save along with the provision of credit.

9. Incorporate the advantageous features of informal borrowing systems (in which women traditionally are active) into the design of formal credit programs serving women when it is appropriate. Examples of such features include frequent repayment schedules; innovative collateral requirements; reduced amounts of paperwork and administrative procedures; and women administrators in cases where male/female interactions are socially restricted. In many cases these features will help reduce transaction costs.

10. The size of loans made available should be appropriate to women's credit needs. In some cases, relatively small amounts of capital may be required by women, but because administratively they are most costly for banks, are not always available. Cost effective measures to provide small scale loans (such as lending larger amounts to groups or cooperatives which in turn allocate smaller amounts to individual members) should be developed.

11. Coordinate credit programs with other efforts such as the introduction of training and appropriate technologies and the development of women's organizations and other support mechanisms which promote women's confidence and ability to participate fully in community life.

12. Develop programs which minimize time, travel and other transaction costs for women.

13. Publicize the availability of credit through information channels which reach women. Make the appropriate necessary changes in management and delivery systems of programs of credit.

14. Support further research in the following areas:

    a. Country specific analyses of laws and regulations on individual ownership and banking practices affecting women's access to modern credit institutions. It is particularly important to establish the effects of these regulatory barriers across socio-economic groups.

    b. Studies of specific women operated agricultural and off-farm and urban economic activities at country and regional levels to determine appropriate loan sizes, interest and repayment schedules that "fit" the economic features of these activities, and to identify specific ways of waiving traditional collateral requirements.

    c. Case studies of successful women specific credit programs and individual women entrepreneurs to identify obstables women face and ways these obstacles have been overcome at the individual and institutional levels. It would also be valuab e to study any institutional credit programs that have been successful in providing credit to both men and women.

    d. Case studies of women borrowers in particular types of economic activities who have defaulted on credit repayment.

    e. Studies assessing transaction costs for women borrowers.

f. Related research necessary for the efficient "targeting" of credit programs include the identification of areas with a high percentage of women headed households; information on households; information on household production in rural and urban areas; analyses of the relation between increases in the provision of credit and increases in productive output.

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FOOTNOTES

1 There are initiatives underway to introduce new technologies for home production and to upgrade the efficiency of household economics. The Farm and Home Development Office of the U.P. College of Agriculture in the Philippines, for example, has launched a new home economics program. Their strategy is to increase women's incentivies for adopting technologies by showing them it would provide higher productivities out of the same resources. New food practices were introduced--proper cooking to preserve nutrients, preparation of meal plans for balanced diets and new food preservation techniques. Techniques for improving health practiced were also provided; the areas covered were sewage, garbage disposal, drainage, immunization against diseases and child welfare (Torres, 1976).

2 The Mabati movement in Kenya gave women time. The roofs mean that rainwater can be saved and stored, releasing women from the daily chore of fetching water, a chore that takes two to 10 hours per household. The women used the traditional rotating credit societies to accumulate cash to buy the tin roofs. Each woman puts so much money in a communal pot; each woman wins the pot with the turn drawn by the lot. With the time saved by available rain water, and often with cash earned by selling some of the water, the women increased their production of vegetables, chickens and peas for sale in the urban markets (Tinker, 1979).

This free time is of little consequence if women are not in an economic and social position to utilize it productively, and for their own needs. A recent study in Ethiopia revealed that over 50% of the men in villages where water development was being planned expected that any time savings realized by their wives would be reallocated into helping them with their work (Carr, 1978).

3 A much quoted example of labor displacement is the loss of women hours due to the introduction of mechanized rice hullers in Java, Indonesia. Using hand pounders to pulverize the rice, a woman could produce 40 kilograms of rice per day; four to five semi-skilled hand laborers produce 2 tons per day with the mechanical pounder. Monthly the latter hull 92 tons as opposed to twelve female laborers' product of 1,000 tons per year. From the employers perspective the mechanical huller is less costly to maintain (less labor supervision), and he is able to keep the rice products which used to go to the women.

From the perspective of the Javanese government, with rice constituting 50% of gross exports, the gain in output is considerable. From the viewpoint of the woman huller, 1.2 million jobs were lost (Collier, 1974).

Due to factors of literacy rates among women, the gross value product per workers, and the total proportion of workers in agriculture in inter-regional and inter-district differentials in women's agricultural participation, there were 1.34 million workers but of a total of 7.10 million in the Punjab, India in 1961. Since 1951, there has been an overall decline in agricultural workers and a corresponding proportionate decrease of women cultivators. In 1951, 1 of every 4 women were farm workers, in 1961, this ratio declined to 1 in 17. Women's current work runs the spectrum of the production process- ploughing, planking and levelling, farmyard manure application, bunching and making water courses, irrigation, planting and sowing, fertilizer application, hoeing and weeding, harvesting, threshing, winnowing and transportation.

The introduction of HYV of wheat rice, hybrid maize, the increased use of fertilizers, irrigation and improved farm techniques characteristic of the modernization process, increased output while increasing total costs of production. It is expected that by 1983-84 all wheat crops in irrigated areas will be mechanical threshed, 1/2 harvested by reaper, 3/5 irrigated by mechanical pumps and 1/5 of all land tractor ploughed. 1983-84 will witness a 33% decline in demand for human labor, if the technological advance proceeds according to present projections in the month of April alone, harvest time when most laborers are casual and women workers.

The introduction of the following technologies are expected to significantly reduce labor requirements:

Technology	Reduction in Demand
High yield varieties	27%
Hand pumps	33%
Wheat thresher	24%
Tractors	18%
Reapers	12%
Corn Shellers	7%
Cane crushers	6%

4 There is an increasing body of literature to show that men are more likely to dispose of income on consumer goods whereas women are more likely to dispose of extra money in beneficial ways. The fact that men have almost total control over cash income in the Diousbel area of Senegal may explain why only 1/3 of this is spent on food items despite the commonly held belief that children do not receive enough food (Carr, 1979).

5 P.C. Volunteers urged women to grind the meat on the daily dinner of mullet gruel; they did not presume to suggest that the man contribute money to buy the food. As men's earnings have increased through cash crops or urban education; they often feel no obligation to their share of child support. Recently, a Kenyan woman sued her urban-dwelling husband in District Court for school fees for their son. His defense was that he had provided her with a piece of land. She was responsible for the care and schooling of the children (Tinker, 1979).

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